

Claims

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SUB A(7)

1 A method for capturing the contents of the files and directories in a

4 file system, said file system comprising a set of storage blocks in a mass storage system

5 including steps for

6 recording an active map in said file system of said storage blocks not

7 available for writing data;

8 recording a consistency point in said file system including a consistent

9 version of said file system at a previous time, said consistency point including a copy of

10 said active map at said previous time;

11 refraining from writing data to storage blocks in response to said active

12 map; and

13 at least one of said copy of said active map at said previous time.

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15 2. A method as in claim 1, wherein said step for refraining includes

16 determining a logical union of said storage blocks used by one or more of said copies of

17 said active map at said previous time.

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2 3. A method as in claim 1, wherein said step for refraining includes
3 determining a subset of said storage blocks used by one or more of said copies of said
4 active map at said previous time.

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6 4. A method as in claim 1, wherein said file system is a WAFL file
7 system.

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9 5. A method as in claim 1, wherein said active map at said previous
10 time is a snapmap.

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12 6. A method as in claim 1 and 5, including removing a root inode of
13 said snapmap using a snap delete.

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15 7. A method as in claim 6, including steps for determining not to write
16 to a block after said step, provided the previous or next snapmap uses said block.

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2 8. A method as in claim 1, including a copy-on-write mechanism for
3 copying modified data to a new block and saving old data in a current data block.
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5 9. A method for capturing the contents of the files and directories in a
6 file system, said file system comprising a set of storage blocks in a mass storage system
7 including

8 recording a consistency point in said file system including a consistent
9 version of said file system at a previous time, said consistency point including a copy of
10 said active map at said previous time; and

11 returning to said file system at a previous time using said consistent version
12 of said file system following an unintended deletion or modification.
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14 10. A method as in claim 9, wherein said consistent version includes a
15 pointer to a previous root block of the inode file.
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17 11. A method as in claim 9, wherein said file system is a WAFL file
18 system.

12. A method as in claim 9, wherein said active map at said previous time is a snapmap.

13. A method as in claim 9 and 12, including a snapdelete method for removing a root inode of said snapmap.

14. A method as in claim 13, including steps for determining not to write to a block after said snapdelete method provided a previous or next snapmap uses said block.

15. A method as in claim 9, including a copy-on-write mechanism for copying modified data to a new block and saving old data in a current data block.

16. A method for saving previous versions of an active file system including the contents of the files and directories in a file system, said file system comprising a set of storage blocks in a mass storage system including steps for writing modified files to unused data blocks;

1 keeping previous files in currently occupied blocks; and

2 recording a consistency point in said file system including a consistent

3 version of said file system at a previous time, said consistency point including a copy of

4 said active map at said previous time;

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6 17. A method as in claim 16, including retrieving said file system at a
7 previous time using a pointer.

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9 18. A method as in claim 16, wherein said pointer corresponds to a root
10 block of said file system at a previous time.

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12 19. A method as in claim 16, wherein said file system is a WAFL file
13 system.

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15 20. A method as in claim 16, wherein said active map at said previous
16 time is a snapmap.

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18 21. A method as in claim 16 and 20, including a snapdelete method for

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1 removing a root inode of said snapmap.

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3 22. A method as in claim 20, including not writing to a block after said
4 snapdelete method provided a previous or next snapmap uses said block.

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6 23. A method as in claim 16, including a copy-on-write mechanism for
7 copying modified data to a new block and saving old data in a current data block.

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